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10/531,752	06/12/2006	Keith R. Minnich	4553-00013	6059

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EXAMINER

MANOHARAN, VIRGINIA

ART UNIT	PAPER NUMBER
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1797

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12/08/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/531,752	Applicant(s) MINNICH ET AL.	
	Examiner Virginia Manoharan	Art Unit 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 August 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-112 is/are pending in the application.
- 4a) Of the above claim(s) 103-112 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-102 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Applicants election of Group 1, claims 1-102 in the reply filed on August 3, 2009 is acknowledged. Because applicants did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

The specification has not been checked to the extent necessary to determine the presence of all possible minor errors, e.g., typographical, grammar, idiomatic, syntax and etc. Applicants' cooperations are requested in correcting any errors of which applicants may become aware in the specification.

Claims 1-102 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a). The claimed "a low solute containing distillate stream" recited in the preamble of claim 1 provides for ambiguity. The terms "solute" and "distillate" have peculiar meaning in the art, i.e., the former would presupposed being based on molecular weight differences as in extraction/absorption process, as opposed to being based on boiling point differences as in a distillation process. That is, at least two unit of operations are involved. See also claims 78 and 90.

b). There are insufficient antecedent bases for the following limitations in the claims:

1). "said bases" in claim 88, line 1;

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2). "scale inhibitor or scale dispersant solutes in said aqueous feedstream" in claim 89, "partially raising the pH" in claim 102, and "preconcentrating said feedstream in a membrane process" in claim 102. [All were not initially recited in the base claim, i.e., the claim from which they directly or indirectly]; and

3). "said softener" in claim 99.

c). The claimed "before feeding said feedwater to said weak acid cation exchange system " in claim 6 appears to be at odd with claim 2, reciting the step of removing said multi-valent cations", the claim from which it depends. See also claim 7. [A dependent claim incorporates every features of the claim from which it depends and cannot change nor orient the limitation already recited in the independent claim].

d). The term "characterized", recited in claim 78 , is not a recitation of positive, manipulative, method/process steps. Also, it is unclear whether the limitation(s) recited prior the "characterized " is to be regarded as part of applicants' invention? Applicants should recite claim 1 in Jepson -format (if intended) to delineate that which is an improvement in the art.

e). The claims or at least part of the claims are recited in passive rather than active steps, e.g., the recitation of by the steps in (11)- (IV)" in claim 78.

f). It is unclear what constitute the "at least about 9" recited in claim 1 as it is not defined in the specification, i.e., is it 8.9 or 91, etc?

Claims 1-102 are objected to because of the following reasons:

a). The inconsistent used of terminology in the claims is improper. For examples:

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- 1). "feed water stream in claim 1, (a), as opposed to "said feed stream" in claim 1, (b) and further "said feedwater" in claim 1 (c)
- 2). "multi-valent metal cations" as opposed to "said multi-valent cations metal" in claim 1 (b) and "said multi-valent cations in claim 2.
- 3). "in neutral or near neutral pH as opposed to "around neutral pH" noting claims 11 and 15-18.
- b). The used of a slash in claim 1 such as "solute/solids" is improper. See also claim 16.
- c). The alkalinity" is a species"? Note claim 1 (a),(III)
- d). The numerals (II) –(IV) in claim 1 should be –(I)-(III).
- e). Claim 35, for example, as recited, is in improper Markush language. --- Wherein R is A, B, or C ---;and --- Wherein R is selected from a group consisting of A, B, and C-- - would both constitute proper Markush languages .

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 78 and 91 rejected under 35 U.S.C. 102(a) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Heins (6,733,636).

Heins is deemed to anticipate or renders obvious the “.. process for the concentration of an aqueous feed stream in an evaporator to produce a low solute containing distillate stream, and retaining at least a portion of said aqueous feed stream in said evaporator to increase the concentration of a solute to a selected concentration factor at a selected pH in said retained portion of said aqueous feed stream, the improvement which comprises feeding said evaporator with an aqueous feed stream characterized at the time of initial entry into said evaporator, by: (I) substantially no multi-valent cations, (II) substantially no alkalinity, (III) substantially no dissolved or suspended gases, and (IV) a pH of at least 9 or above as broadly claimed in claim 78. See col. 5, lines 45-69. Obviously, Heins’ aqueous feed stream is characterized at the time of initial entry into said evaporator, by: (I) substantially no multi-valent cations, (II) substantially no alkalinity, (III) substantially no dissolved or suspended gases, and (IV) a pH of at least 9 or above as claimed in claim 78; and prior to feeding of said aqueous feed stream to said evaporation equipment, in any order, (I) minimizing multi-valent cations in said aqueous feed stream, (II) minimizing alkalinity of said aqueous feed stream, (III) minimizing gases dissolved or suspended in said aqueous feed stream; (b) then, after step (a), increasing the pH of said aqueous feed stream in said evaporation equipment to at least about 9, or higher as further claimed in claim 91. See the entire document including FIGS. 3 and 4.

Claims 1-77, 79-90 and 92-102 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heins (6,733,636) in view of Riggs, Jr. (4,746,438) or Wiegert (4,235,715).

Heins is discussed supra. Heins further discloses the steps of passing the product from step (c) in claim 1 into a heat transfer equipment, wherein said heat transfer equipment: (I) contains a plurality of heat transfer surfaces, (II) contains a circulating high solids solution, and (III) wherein the pH of said circulating solution is maintained to at least about 9, or higher, so as to concentrate said feed water to said selected concentration factor, to produce: (I) a high solute/solids containing blowdown stream, and (II) a low solute containing distillate stream. See col. 3, lines 24-66 through col.4 and col. 5, lines 18-67. Heins also renders obvious the step wherein the heat transfer equipment is operated in a mechanical vapor recompression mode as claimed e.g., in claim 50; and wherein said heat transfer equipment is operated in a thermal compression mode as claimed, e.g., in claim 51. See col. 4, lines 32-33. Heins also discloses the membrane process in claim 102; and the softening process in claim 99. See e.g., FIG. 3. Riggs, Jr. teaches a method of purifying contaminated water including the process/method steps of providing a feed water stream containing soluble and insoluble inorganic and organic species therein, said species comprising: multi-valent metal cations, alkalinity, at least one molecular species which is at low ionization levels when in solution at around neutral pH; removing a portion or substantially all multi-valent cations metal from said feed; removing substantially all alkalinity from said feed water stream; removing dissolved gas from said feed water stream stream and raising

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the pH of said feed water stream to at least about 9 or higher as claimed e.g., in claim 1. See col. 4, lines 49-59, col 6, lines 57-68 through cols. 7-8. Wiegert likewise teaches basically similar process/method as above. See FIGS 1-2. Furthermore, Fig. 2 of Wiegert shows a weak acid cation ion exchange system operated in a hydrogen form as claimed in claim 3; as well as being operated in a sodium form as claimed in claim 4. To incorporate the above teachings of Riggs, Jr or Wiegert to Heins' process would have been obvious to one of ordinary skill in the art inasmuch as Heins in FIGS 1-2 indicates them to be what is conventionally done in the art as "PRIOR ART"; suggests the combination of the above water treatment at col. 3, lines 35-57; and further suggests the motivation to raising or maintaining the circulating concentrated brine to a high pH at col. 4, lines 50-54.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a). Kresnyak et al discloses a method for removing contaminants with reduced fouling.
- b). Harris et al discloses an evaporative process employing a membrane.
- c). Anderson discloses a method/process of purifying saline water including the step of raising the pH of water.
- d). Gallup et al discloses a method for controlling the deposition of metal –containing scales from an aqueous geothermal brine or the like.
- e). El Allawy discloses a process wherein the volatile hydrocarbons are separated from water by thermal degassing.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to V. Manoharan whose telephone number is (571) 272-1450.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444.

The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Virginia Manoharan/
Primary Examiner, Art Unit 1797

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